IN THE CLAIMS

27. (Currently amended) A method for producing a short segment of DNA, suitable for analysis by mass spectrometry, comprising the steps of:

amplifying cDNA or genomic DNA of a subject using ~~the~~ a pair of primers ~~of claim 15~~ to form amplified DNA, wherein each primer of the pair comprises a linear oligonucleotide comprising a 5' end and a 3' end, said oligonucleotide consisting of at least 35 nucleotides, wherein a first portion of said oligonucleotide of at least 13 nucleotides at the 5' end of said oligonucleotide and a second portion of the oligonucleotide of from 5 to 22 nucleotides at the 3' end of the oligonucleotide are precisely complementary to a first portion and a second portion of a cDNA or genomic DNA, wherein 4-8 nucleotides between the first portion and the second portion of the oligonucleotide comprise a recognition site for a restriction endonuclease that cleaves at least 5 nucleotides from its recognition site, wherein the segment of the cDNA or genomic DNA does not comprise the recognition site for the restriction endonuclease, wherein each primer of the pair of primers is complementary to an opposite strand of a double stranded cDNA or genomic DNA molecule, wherein the pair of primers is complementary to two non-contiguous portions of the double stranded cDNA or genomic DNA molecule, wherein 1 to 20 nucleotides separate the two non-contiguous portions of the double stranded cDNA or genomic DNA molecule;

digesting the amplified DNA with the restriction endonuclease to form a short segment of DNA.

28. (Currently amended) A method for producing a short segment of DNA, suitable for analysis by mass spectrometry, comprising the steps of:

amplifying cDNA or genomic DNA of a subject using ~~the~~ a pair of primers ~~of claim 21~~ to form amplified DNA, wherein each primer of the pair of primers comprises a linear oligonucleotide comprising a 5' end and a 3' end, said oligonucleotide consisting of at least 35 nucleotides, wherein a first portion of said oligonucleotide of at least 13 nucleotides at the 5' end of said oligonucleotide and a second portion of the

oligonucleotide of from 5 to 22 nucleotides at the 3' end of the oligonucleotide are substantially complementary to a first portion and a second portion of a cDNA or genomic DNA, wherein 4-8 nucleotides between the first portion and the second portion of the oligonucleotide comprise a recognition site for a restriction endonuclease that cleaves at least 5 nucleotides from its recognition site, wherein the segment of the cDNA or genomic DNA does not comprise the recognition site for the restriction endonuclease, wherein each primer of the pair of primers is complementary to an opposite strand of a double stranded cDNA or genomic DNA molecule, wherein the pair of primers is complementary to two non-contiguous portions of the double stranded cDNA or genomic DNA molecule, wherein 1 to 20 nucleotides separate the two non-contiguous portions of the double stranded cDNA or genomic DNA molecule;

digesting the amplified DNA with the restriction endonuclease to form a short segment of DNA.